Integrujte

(1) $\int \frac{3x+5}{x^2+6x+9}\,\mathrm{d}x.$

(2) $\int \frac{x^2+1}{x^2+4x+3}\,\mathrm{d}x.$

(3) $\int \frac{x^2-x-4}{16-x^4}\,\mathrm{d}x.$

(4) $\int \frac{x^3+1}{x^3-3x^2+3x-1}\,\mathrm{d}x.$

(5) $\int \frac{x^2}{x^4-1}\,\mathrm{d}x.$

(6) $\int \frac{x^3+x-2}{x^3-x^2-4x+4}\,\mathrm{d}x.$

(7) $\int \frac{x^3+2}{x^2+4x+8}\,\mathrm{d}x.$

(8) $\int \frac{7x+6}{x^3+3x^2-4x-12}\,\mathrm{d}x.$

(9) $\int \frac{x^3}{x^3+2x^2+4x+8}\,\mathrm{d}x.$

(10) $\int \frac{x-3}{x^2+2x+2}\,\mathrm{d}x.$

(11) $\int \frac{2x+3}{x^2+2x+1}\,\mathrm{d}x.$

(12) $\int \frac{x^2+2}{x^2+2x+5}\,\mathrm{d}x.$

(13) $\int \frac{2x}{x^3+6x^2+11x+6}\,\mathrm{d}x.$

(14) $\int \frac{2x+5}{4x^2+4x+5}\,\mathrm{d}x.$

(15) $\int \frac{2x^2}{x^2+3x+2}\,\mathrm{d}x.$

(16) $\int \frac{18-2x^3}{x^2+6x+13}\,\mathrm{d}x.$

(17) $\int \frac{x}{2x^2-3x+1}\,\mathrm{d}x.$

(18) $\int \frac{x^2-16}{x^2+6x+8}\,\mathrm{d}x.$

(19) $\int \frac{x^3+2}{x^2+4x+4}\,\mathrm{d}x.$

(20) $\int \frac{3-x^2}{x^2+6x+10}\,\mathrm{d}x.$

(21) $\int \frac{1-x}{x^2-4}\,\mathrm{d}x.$

(22) $\int \frac{x^3-20x+1}{x^2+6x+5}\,\mathrm{d}x.$

(23) $\int \frac{x^2-5}{x^3-x^2-x+1}\,\mathrm{d}x.$

(24) $\int \frac{x^3}{1-x^2}\,\mathrm{d}x.$

(25) $\int \frac{x^3+2}{x^3+x^2-2x}\,\mathrm{d}x.$

(26) $\int \frac{x^3+24}{x^2+6x}\,\mathrm{d}x.$

(27) $\int \frac{x^2-3}{x^3-x^2+x-1}\,\mathrm{d}x.$

(28) $\int \frac{x^2-x-3}{2x^2+3x-9}\,\mathrm{d}x.$

(29) $\int \frac{x^2+x+2}{x^3+3x^2+2x}\,\mathrm{d}x.$

(30) $\int \frac{3x^2+4}{x^2+x}\,\mathrm{d}x.$

Integrujte

(1) $\displaystyle\int \frac{3x+5}{x^2+6x+9}\,\mathrm{d}x = \frac{4}{x+3} + 3\ln|x+3| + c = \frac{4}{x+3} + 3\log(x+3) + c.$

(2) $\displaystyle\int \frac{x^2+1}{x^2+4x+3}\,\mathrm{d}x = -5\ln|x+3| + \ln|x+1| + x + c = x + \log(-6(x+1)) - 5\log(6(x+3)) + c.$

(3) $$\begin{aligned}\int \frac{x^2-x-4}{16-x^4}\,\mathrm{d}x &= -\frac{1}{16}\ln\left|x^2+4\right| + \frac{1}{16}\ln|x-2| + \frac{1}{16}\ln|x+2| - \frac{1}{2}\operatorname{arctg}\left(\frac{x}{2}\right) + c = \\ &= -\frac{1}{16}\log\left(x^2+4\right) + \frac{1}{16}\log(x-2) + \frac{1}{16}\log(x+2) - \frac{1}{2}\tan^{-1}\left(\frac{x}{2}\right) + c.\end{aligned}$$

(4) $\displaystyle\int \frac{x^3+1}{x^3-3x^2+3x-1}\,\mathrm{d}x = x + 3\ln|x-1| - \frac{3}{x-1} - \frac{1}{(x-1)^2} + c = \frac{2-3x}{(x-1)^2} + x + 3\log(x-1) + c.$

(5)
$\displaystyle\int \frac{x^2}{x^4-1}\,\mathrm{d}x = \frac{1}{4}\ln|x-1| - \frac{1}{4}\ln|x+1| + \frac{1}{2}\operatorname{arctg}(x) + c = \frac{1}{4}\log(x-1) - \frac{1}{4}\log(x+1) + \frac{1}{2}\tan^{-1}(x) + c.$

(6) $\displaystyle\int \frac{x^3+x-2}{x^3-x^2-4x+4}\,\mathrm{d}x = x - \ln|x+2| + 2\ln|x-2| + c = x + 2\log(-3(x-2)) - \log(3(x+2)) + c.$

(7) $$\begin{aligned}\int \frac{x^3+2}{x^2+4x+8}\,\mathrm{d}x &= \frac{x^2}{2} - 4x + 4\ln\left|x^2+4x+8\right| + 9\operatorname{arctg}\left(\frac{x+2}{2}\right) + c = \\ &= \frac{x^2}{2} + 4\log\left(x^2+4x+8\right) - 4x + 9\tan^{-1}\left(\frac{x+2}{2}\right) + c.\end{aligned}$$

(8) $$\begin{aligned}\int \frac{7x+6}{x^3+3x^2-4x-12}\,\mathrm{d}x &= \ln|x-2| + 2\ln|x+2| - 3\ln|x+3| + c = \\ &= \log(x-2) + 2\log(x+2) - 3\log(x+3) + c.\end{aligned}$$

(9) $$\begin{aligned}\int \frac{x^3}{x^3+2x^2+4x+8}\,\mathrm{d}x &= x - \frac{1}{2}\ln\left|x^2+4\right| - \operatorname{arctg}\left(\frac{x}{2}\right) - \ln|x+2| + c = \\ &= -\frac{1}{2}\log\left(x^2+4\right) + x - \log(x+2) - \tan^{-1}\left(\frac{x}{2}\right) + c.\end{aligned}$$

(10) $\displaystyle\int \frac{x-3}{x^2+2x+2}\,\mathrm{d}x = \frac{1}{2}\ln\left(x^2+2x+2\right) - 4\operatorname{arctg}(x+1) + c.$

(11) $\displaystyle\int \frac{2x+3}{x^2+2x+1}\,\mathrm{d}x = 2\ln|x+1| - \frac{1}{x+1} + c.$

(12) $$\int \frac{x^2+2}{x^2+2x+5}\,\mathrm{d}x = x - \ln\left|x^2+2x+5\right| - \frac{1}{2}\operatorname{arctg}\left(\frac{x+1}{2}\right) + c = \\ = -\log\left(x^2+2x+5\right) + x - \frac{1}{2}\tan^{-1}\left(\frac{x+1}{2}\right) + c.$$

(13) $$\int \frac{2x}{x^3+6x^2+11x+6}\,\mathrm{d}x = 4\ln|x+2| - 3\ln|x+3| - \ln|x+1| + c = \\ = 2\left(-\frac{1}{2}\log(x+1) + 2\log(x+2) - \frac{3}{2}\log(x+3)\right) + c.$$

(14) $$\int \frac{2x+5}{4x^2+4x+5}\,\mathrm{d}x = \frac{1}{4}\left(\ln\left|4x^2+4x+5\right| + 4\operatorname{arctg}\left(\frac{2x+1}{2}\right)\right) + c = \\ = \frac{1}{4}\log\left(4x^2+4x+5\right) + \tan^{-1}\left(\frac{1}{2}(2x+1)\right) + c.$$

(15)
$$\int \frac{2x^2}{x^2+3x+2}\,\mathrm{d}x = -8\ln|x+2| + 2\ln|x+1| + 2x + c = 2(x + \log(-5(x+1)) - 4\log(5(x+2))) + c.$$

(16) $$\int \frac{18-2x^3}{x^2+6x+13}\,\mathrm{d}x = -x^2+12x-23\ln\left|x^2+6x+13\right| + c = \\ = -2\left(\frac{x^2}{2} + \frac{23}{2}\log\left(x^2+6x+13\right) - 6x\right) + c.$$

(17) $$\int \frac{x}{2x^2-3x+1}\,\mathrm{d}x = \ln|x-1| - \frac{1}{2}\ln|2x-1| + c = \log(-3(x-1)) - \frac{1}{2}\log(3(2x-1)) + c.$$

(18) $$\int \frac{x^2-16}{x^2+6x+8}\,\mathrm{d}x = x - 6\ln|x+2| + c = x - 6\log(x+2) + c.$$

(19) $$\int \frac{x^3+2}{x^2+4x+4}\,\mathrm{d}x = \frac{x^2}{2} - 4x + \frac{6}{x+2} + 12\ln|x+2| + c = \frac{x^2}{2} - 4x + \frac{6}{x+2} + 12\log(x+2) - 10 + c.$$

(20) $$\int \frac{3-x^2}{x^2+6x+10}\,\mathrm{d}x = -x + 3\ln\left|x^2+6x+10\right| - 5\operatorname{arctg}(x+3) + c = \\ = 3\log\left(x^2+6x+10\right) - x - 5\tan^{-1}(x+3) + c.$$

(21) $$\int \frac{1-x}{x^2-4}\,\mathrm{d}x = -\frac{1}{4}\ln|x-2| - \frac{3}{4}\ln|x+2| + c = -\frac{1}{4}\log(2-x) - \frac{3}{4}\log(x+2) + c.$$

(22)
$$\int \frac{x^3-20x+1}{x^2+6x+5}\,\mathrm{d}x = \frac{x^2}{2} - 6x + 6\ln\left|(x+5\right| + 5\ln|x+1| + c = \frac{x^2}{2} - 6x + 6\log(-x-5) + 5\log(x+1) + c.$$

(23) $$\int \frac{x^2-5}{x^3-x^2-x+1}\,\mathrm{d}x = \frac{2}{x-1}+2\ln|x-1|-\ln|x+1|+c = \frac{2}{x-1}+2\log(x-1)-\log(x+1)+c.$$

(24) $$\int \frac{x^3}{1-x^2}\,\mathrm{d}x = \frac{x^2}{2}-\frac{1}{2}\ln\left|1-x^2\right|+c = -\frac{x^2}{2}-\frac{1}{2}\log\left(x^2-1\right)+c.$$

(25) $$\begin{aligned}\int \frac{x^3+2}{x^3+x^2-2x}\,\mathrm{d}x &= x+\ln|x-1|-\ln|x|-\ln|x+2|+c = \\ &= x+\log(-2(x-1))-\log(x)-\log(2(x+2))+c.\end{aligned}$$

(26) $$\int \frac{x^3+24}{x^2+6x}\,\mathrm{d}x = \frac{x^2}{2}-6x+4\ln|x|+32\ln|x+6|+c = \frac{x^2}{2}-6x+4\log(x)+32\log(x+6)+c.$$

(27) $$\begin{aligned}\int \frac{x^2-3}{x^3-x^2+x-1}\,\mathrm{d}x &= \ln\left|x^2+1\right|-\ln|x-1|+2\,\mathrm{arctg}\,(x)+c = \\ &= \log\left(x^2+1\right)-\log(x-1)+2\tan^{-1}(x)+c.\end{aligned}$$

(28) $$\begin{aligned}\int \frac{x^2-x-3}{2x^2+3x-9}\,\mathrm{d}x &= \frac{1}{2}\left(x-\frac{1}{2}\ln|2x-3|-2\ln|x+3|\right)+c = \\ &= \frac{x}{2}-\log(3(x+3))-\frac{1}{4}\log(-3(2x-3))+c.\end{aligned}$$

(29) $$\begin{aligned}\int \frac{x^2+x+2}{x^3+3x^2+2x}\,\mathrm{d}x &= \ln|x|-2\ln|x+1|+2\ln|x+2|+c = \\ &= \log(x)-2\log(3(x+1))+\log(-3(x+2))+\log(x+2)+c.\end{aligned}$$

(30) $$\int \frac{3x^2+4}{x^2+x}\,\mathrm{d}x = 3x+4\ln|x|-7\ln|x+1|+c.$$